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The art of medicine

Celebrating Florence Nightingale's bicentenary

For the many admirers of Florence Nightingale (1820–1910), the bicentenary of her birth on May 12, 2020, has been long anticipated. Few of us could have foreseen that this birthday would come at a time when a swathe of new temporary hospitals bearing her name had been set up in the UK—the NHS Nightingale Hospitals, intended to support the response to coronavirus disease 2019 (COVID-19). No other name could have been as suitable. 200 years after her birth, the work and concerns of Nightingale are as relevant today as they ever were. Her pioneering work to establish nursing as a profession, her use of statistics and data to create early evidence-based health care, and her work on hospital design are all recognisable to health-care professionals working now. But perhaps the greatest resonance is her role as a political influencer and campaigner. Scientific advisers today might recognise with wry sympathy Nightingale's furious attempts to advise politicians in her determination to reform public health.

Nightingale was no stranger to infectious disease. All those living and working in 19th-century London knew and feared the regular and deadly epidemics that swept the capital—smallpox, measles, whooping cough, and diphtheria, among others—but medical practitioners like Nightingale had a special interest and understanding. In one devastating 1854 cholera outbreak in London during which hundreds of people died, Nightingale volunteered to nurse at the Middlesex Hospital, going for 2 nights without sleep and witnessing the effects of an epidemic at close quarters.

Before widespread vaccination, hygiene, quarantine, and keeping the patient warm, fed, and hydrated were among the main weapons in protecting against disease. Nightingale's work in a small London hospital in the early 1850s and during the Crimean War of 1853–56 was before germ theory became widespread, and even in later years, Nightingale was slow to accept this new way of thinking, although she did eventually late in life. Despite this, many of the important strategies that she promoted to protect against disease followed along the same lines as germ theory, but she practised them as a result of her own observations. She had seen for herself that ventilation and stringent hygiene prevented disease and she promoted nursing based on these practices. Along with other 19th-century medical practitioners, Nightingale wrote about what was called at the time zymotic disease—a step between the old theory of miasma, which argued that disease was spread via bad air, and the emerging germ theory. Zymotic disease was a concept of fermentation spreading disease, dividing diseases between zymotic (preventable) ones such as dysentery and cholera and non-preventable ones.

Nightingale had observed the effects of disease and ill health from an early age because her wealthy family

demanded a certain amount of charitable work and she was expected to visit the poor and sick of the parish. With a large private income and liberal beliefs, her parents were determined that their two daughters should receive a full education from governesses and later from their father. Their education included subjects traditionally reserved for boys such as mathematics, which Nightingale excelled in. She later passed on her knowledge to her younger cousins through tutoring. Despite their liberal beliefs, the expectations for the young Nightingale's future were clear. The Nightingales had not expected their daughter to do anything more adventurous than to get married, or failing that, stay at home and be a comfort to her parents. So when the teenage Nightingale announced her ambition to be a nurse to her horrified family, she later said: "It was as if I had said I wanted to be a kitchenmaid."

Nightingale was to see great changes in nursing and hospital care in her lifetime. Industrialisation in the UK in the late 18th and 19th centuries caused dramatic changes to health and social issues. Before the increase in urban living that followed industrialisation, the sick would have been largely cared for at home. Patients didn't go to hospital unless they really had to as it was too risky—it is not without reason that Nightingale wrote in *Notes on Hospitals* "It may seem a strange principle to enunciate as the very first requirement in a Hospital that it should do the sick no harm." Early 19th-century British hospitals were typically associated with pesthouses, poor-houses, asylums, or fever hospitals.



Portrait of Florence Nightingale in her youth

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For centuries, nurses belonging to religious orders were closely connected to charity hospitals and visited the sick at home. Arguably, the nursing sisters were the front line of defence at times of contagious disease outbreaks. The great reformer Elizabeth Fry (1780–1845), most famous for her work with prisons, founded the Society of Protestant Sisters of Charity in 1840, later changing the name to the Institution of Nursing Sisters. Her aim was to provide home nursing for the sick and poor, and she was a pioneer in private nursing in terms of her emphasis on training and active recruitment. In 1848, the St John's House was created and was the first organisation in the UK to offer hospital training to nurses, for which the trainees had to pay. It was one of the first attempts at hospital reform in the UK, and unlike other Anglican orders, the St John's House Sisters only undertook nursing duties, and not social or domestic work. Like Fry's Sisters of Charity, St John's Sisters emphasised active recruitment, and bemoaned the fact in 1849 that many parents "prefer putting their children to some already known and tried employment as dressmakers, schoolmistresses, etc" and not nursing.

Nightingale's parents were right to be worried about her intended career. Hospitals were justifiably feared as places where patients could leave in worse health than when they were admitted. Little ventilation and poor hygiene meant rampant cross-infection and strange smells, and there was no night nursing usually other than for the dying or women in labour. Most of the nursing was done by ambulant patients or by older women who did light caring tasks in return for bed and board. Hospital nurses generally were older women—the 1841 British census tells us that most institutional nurses were in their mid-40s or older. Hospital nursing would have been less strenuous than home nursing and many women moved between the two areas of nursing. This overlap between domestic service and nursing contributed to the low status with which nursing was viewed by many.

Eventually, however, Nightingale was permitted to fulfil her ambitions to train for several months in the Kaiserswerth Institute of Deaconesses, just outside Düsseldorf in Germany, one of the few places to offer any sort of nursing training at

this time. She also spent time in Paris and in touring hospitals in various European cities, something that greatly added to her breadth of knowledge of hospital life. By 1853, she was working as Superintendent in a small, charitable hospital in Upper Harley Street in London, and it was here that she learned of the outbreak of the Crimean War.

The fact that Nightingale's family was well connected, combined with her determination, intelligence, sheer drive, and nursing experience made her an obvious choice to be approached by the British Government to go to a British base hospital in Constantinople, now Istanbul, and lead a group of nurses to help care for wounded and sick troops. Soldiers died not only in battle but often also from infection and disease. This was without doubt one of the most important experiences of Nightingale's life. The work she did in the Crimean War developed her interest in nursing and her commitment to improving health, and ultimately transformed her into a passionate campaigner for health reform with both a global view and global influence.

When Nightingale first arrived at Scutari Barracks Hospital in 1854, she practised hands-on nursing with the 38 British nurses she had recruited to help her, although they were all answerable to the doctors already working there. Soon after her arrival, she started to take control of the administration of the hospital. She realised that its management, including the distribution of precious rations and maintenance of basic hygiene, was not being attended to effectively. Nightingale also addressed the patients' dignity, and erected screens around soldiers undergoing operations to give them privacy and protect other patients from the grisly scenes—all important to keep up the morale of the men.

Nightingale was later to write that her efforts to improve conditions for patients at Scutari hospital through better sanitation, ventilation, hospital conditions, and the quality of care, alongside the collection and reporting of statistics, was a joint effort between her, the nurses and doctors, and the Sanitary Commission, which was sent to Scutari in 1855 by Prime Minister Lord Palmerston, and co-led by the Scottish physician John Sutherland and supported by Nightingale. Sutherland was later to become a close friend and collaborator of Nightingale's, working with her on sanitary reforms and health care for the British Army. The Sanitary Commission inspected the hospital and found that it had been built on a blocked sewer. Dead animals were also found on the site, and a dead horse was blocking a pipe carrying water. The commission unblocked the sewer and water tanks, cleaned up the hospital, and lime washed the walls. The positive effect of these actions on reducing mortality rates was recorded in the Sanitary Commission's report.

Nightingale's earlier work at Harley Street had given her the skills and confidence to manage the British hospitals in the Crimean War, and her wartime work was of crucial importance to her later reforms. She had always collected facts and data—the notebooks kept in her youth show carefully recorded



Florence Nightingale and Sir Harry Verney with a group of nurses at Claydon House in 1886

Wellcome Collection, CC BY 4.0

information about natural history and different populations. In Scutari, for the first time, her passion for mathematics and for nursing came together, and this directly fed into her post-war health reforms dedicated to improving the health of the British military, hospital design, and public health generally.

In all her post-war reforms, two elements weave through: the importance of nursing framed as a respected profession and statistics. Statistics were hugely popular in the 19th century, with the more thorough civil registration of births, deaths, and marriages and improved methods of data collection by government for the census. Statistical societies were formed across the UK, and Nightingale was later to become the first woman elected to the Royal Statistical Society. When in Scutari, Nightingale began to collect data on the number and causes of deaths in her hospitals, and this data gathering later proved that far more men died of disease, infection, and exposure than in battle—a fact that shocked the British nation. One of Nightingale’s most important talents was in displaying data visually. The impact of the graphs and charts she created made Nightingale’s arguments pack a powerful punch. Arguably, her work in this area contributed to the development of evidence-based health care and is especially relevant at the present time when it is so crucial to understand and critically evaluate the data generated and shared on the COVID-19 pandemic.

The appalling conditions in the Scutari Barracks Hospital and the treatment of the British soldiers in the Crimean War directly led to later health-care reform in Britain. The indignation felt by the British public was fuelled by the improved communications in technology, allowing the press to report back quickly from the battlefields. The public outcry was cleverly used by Nightingale as leverage to achieve her aims, using her powers of advocacy and political persuasion to establish nursing as a profession and to improve health of the military, and eventually that of the wider public.

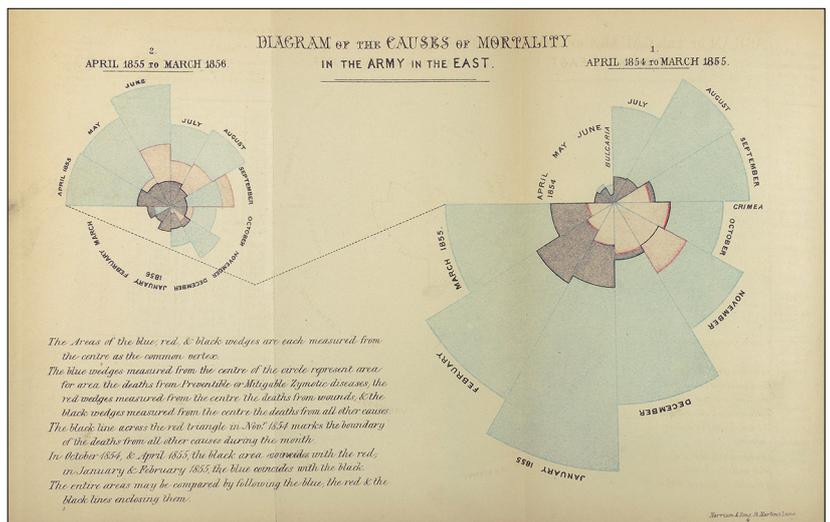
Her commitment to advance the profession of nursing was aided by the Nightingale Fund, set up in 1855. The fund was specifically created for establishing a formal nursing training school and it eventually raised more than £44 000. Nightingale herself would never have taken over as head of the nursing school due to her own poor health caused during the deprivations and strain she suffered during her wartime nursing, but she was the force behind the school, especially after the 1870s. Opening at St Thomas’ Hospital in 1860 and moving into the new buildings by the Thames in 1872, the Nightingale Home and Training School for Nurses remained there until the bombing in World War 2.

The Nightingale system was to become global; nurses trained in the Nightingale way of doing things were encouraged to go out into the world and set up Nightingale schools. This educational legacy means that even today, Nightingale is an internationally recognised figure. The Nightingale system stipulated that a matron was in complete charge of the junior nurses, as Nightingale stated:

“to take all of the power over the nurses out of the hands of men and put it into the hands of one female trained head”. The emphasis on student nurses was as much on character as aptitude—they were to be honest, sober, and loyal as well as undergoing thorough training. The role of the nurse was paramount in delivering health care in Victorian hospitals and this is still the case today. As was the case in Nightingale’s world, there remains much work to do on nursing recruitment, retention, and leadership, and the COVID-19 pandemic is putting this into still sharper focus.

Although the new temporary NHS Nightingale Hospitals bear Florence Nightingale’s name, the main wards that they contain will be named after other people who have contributed to health care. Doubtless some of the hospitals will have a Seacole ward, honouring the work of Mary Seacole (1805–81). Many myths have grown up around Seacole, not least that she and Nightingale were bitter enemies. In reality, they met briefly once, and cordially. Seacole went to help the soldiers in the Crimean War, setting up what she called The British Hotel near the battlefields. Interestingly for those interested in the history of pharmacy, she used to care for the soldiers using herbal remedies that she had learnt from her mother at home in Jamaica. Unlike with Nightingale, whose possessions and memory were treasured from her own lifetime, Seacole’s fame faded quickly and she was largely overlooked for many years.

As Nightingale would have been the first to admit, progress is caused by collaboration and the efforts of many different people. This can be seen clearly in the wartime nursing of the Crimean War. Although Nightingale was the figurehead of nursing reform, countless women travelled to Istanbul or Crimea to assist the war effort through nursing. One of my own favourite nurses was a Welsh nurse called Elizabeth Davies (1789–1860), also known as Betsy Cadwaladyr, who was in



A statistical chart invented by Florence Nightingale to show the predominance of disease as a cause of mortality in the British Army during the Crimean War



Photograph by the London Stereoscopic & Photographic Company Ltd/Wellcome Collection. CC BY 4.0

Florence Nightingale (1820–1910)

Scutari with Nightingale and later published her experiences. Davies began her nursing through assisting women during childbirth in her role as domestic servant, and then moved to nursing at Guy's Hospital before becoming a home, and then a military nurse. Her writing is entertainingly judgmental—she was critical of Nightingale even before they had met. The lives of Davies and Seacole point to the diverse backgrounds and varied paths that women followed as they forged careers in nursing during this period.

Nightingale's difficult experiences in the war acted as a crucible for her later writing and campaigns, but her struggles were by no means over. During the war, she had contracted what is now thought by many to have been brucellosis, known at the time as Crimean fever, which she suffered from for the rest of her life. Her chronic ill health, including fatigue, joint pain, and back pain, also impacted her mental health. By the late 1850s, she more or less lived in seclusion, and yet still worked furiously hard. She would often refuse to see her family because of her poor health, but her output was staggering and included writing on improving the arrangements for soldiers' health, general hospital reform, nursing education, and religion—Nightingale's *Suggestions for Thought* were published the same year the Nightingale Home and Training School for Nurses opened. Although her writings were connected by health reform, they covered an incredibly wide range of subjects, including much on her particular interest in public health in India. Perhaps her influence was all the stronger from being a recluse, because it added an element of transactions to her meetings—people who wanted to see her had to visit her, no matter how important they were. Some of Nightingale's visitors didn't believe she was ill because she seemed so energetic, although her closest companions, colleagues, and relatives

didn't doubt her ill health. Her biographer Mark Bostridge described Nightingale as "one of history's most famous invalids" and certainly much speculation has taken place about the condition of her health. As is often the case with people with immense drive, Nightingale was unquestionably difficult to live with, and her extensive letters, many of which are still in existence, display a fascinating ability to influence through the strength of her personality, using tactics such as passive aggression, overt criticism, charm, and praise—often all in one letter.

Among the many topics Nightingale had strong views on was the adaption of large buildings to act as temporary hospitals. She was asked to advise on the improvement of a new military hospital at Netley which opened in 1858; she suggested widening corridors and adding more windows to improve ventilation and the supply of fresh air, but her recommendations were ignored, much to her fury. The concept of "pavilion style" hospitals, with separate wings to hinder the spread of infection and aid ventilation, was in fact first seen in the Herbert Military Hospital, which was built in 1859, and its design was closely supervised by Nightingale. The style became widely used and popular. Nightingale published *Notes on Hospitals* in 1859 and it included articles on the pavilion style and its benefits. She also advised on the design of the 1872 new St Thomas' Hospital, which consisted of seven huge pavilions, a chapel, and Governor's Hall. Nightingale suggested that the walls of the wards should be covered in washable cement to maximise their cleanliness and prevent the spread of disease.

Looking back at history offers us a variety of things. It can give reassurance as we are reminded that things are always changing, and that even tough times will pass and can be opportunities for reform and transformation. When reflecting on Nightingale's work in the context of the COVID-19 pandemic, we notice the gap between the medical advice she gave, and the provisions actually made by the government. Nightingale was remorseless in advising government ministers, recognising that the perspective she had as an active health-care professional was very different to that of politicians. Strikingly, when we look back at Nightingale's requests from Scutari Barracks Hospital to the Secretary At War Sidney Herbert, she was not pressing for larger accommodation but rather for smaller pieces of medical equipment that would protect both soldiers and staff alike, and enable them to keep the hospital clean. Perhaps the most fitting 200th birthday tribute to Nightingale would be for politicians to listen to the advice of health-care professionals working on the front lines and those researching the COVID-19 pandemic—and to act accordingly.

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Further reading

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